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WWW.HZMUD.COM/25

Customer Information

Operator: Noble Energy Inc
1625 Broadway
Suite 2200
Denver, Colorado 80202

Geologist: Teresa Malesardi
Noble Energy Inc.

Mud Logging Details

Logger: Tom Denney &
Brian Whitfield

Log Interval: 6900' MD to 11214' MD

Start Date: November 20, 2013

Release Date: November 23, 2013

Well Information

Well Name: Crow Creek State
AC36-72-1HN HZ

Location: 36-7N-63W
270' FSL, 1350' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 277

Total Depth: 11214' MD

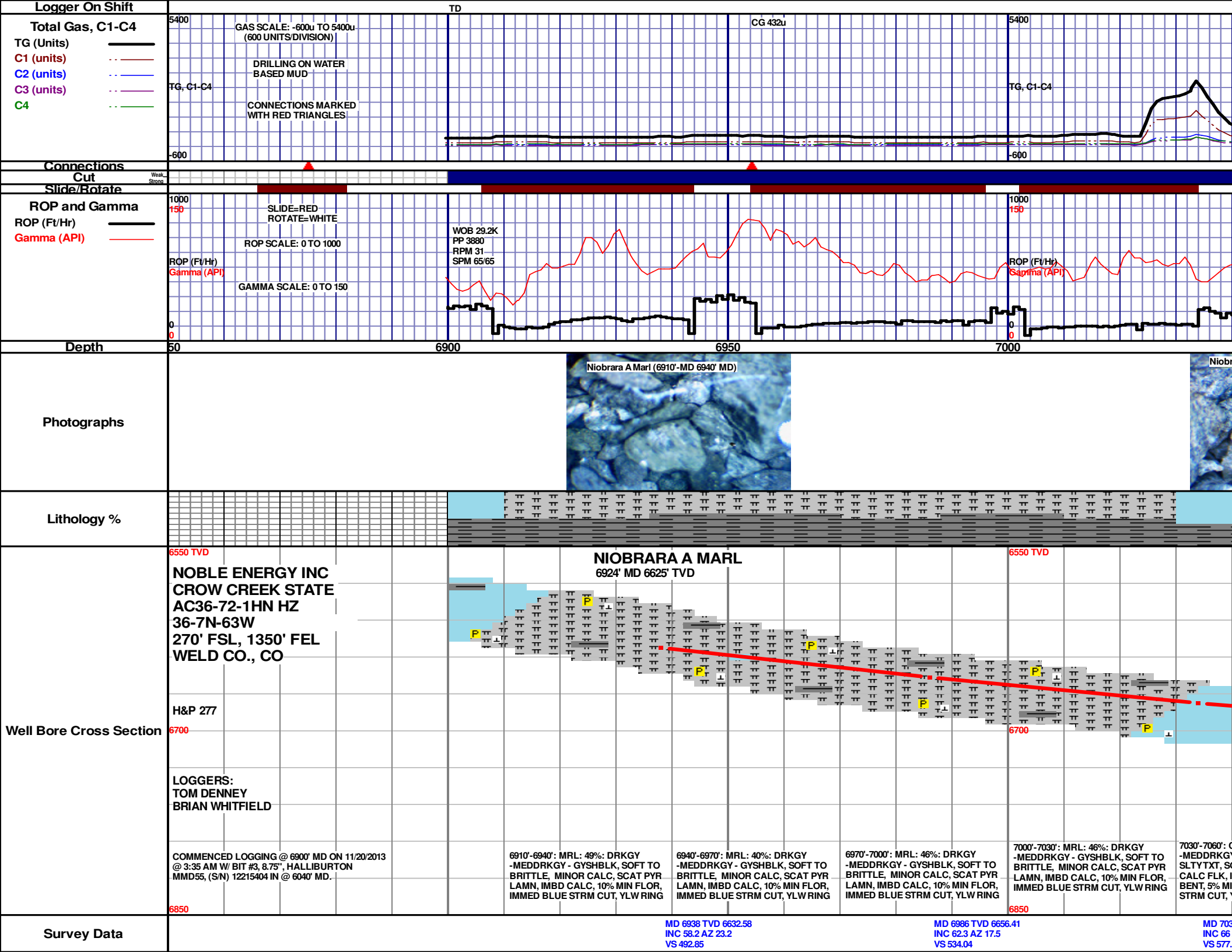
TD Date: November 23, 2013

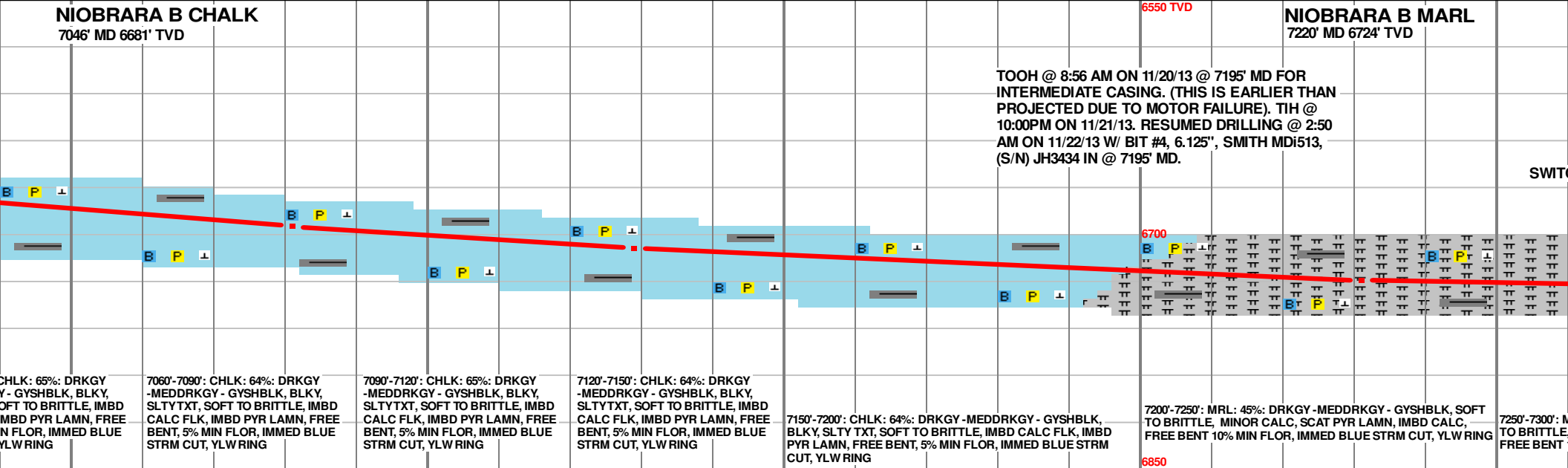
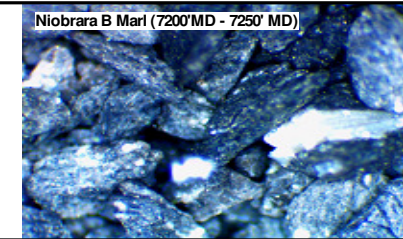
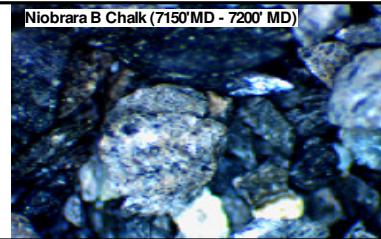
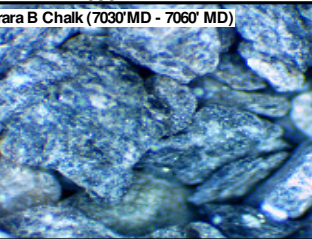
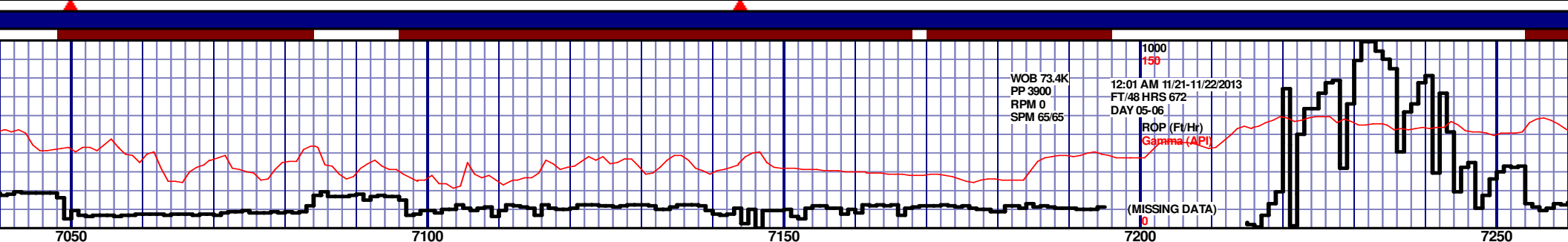
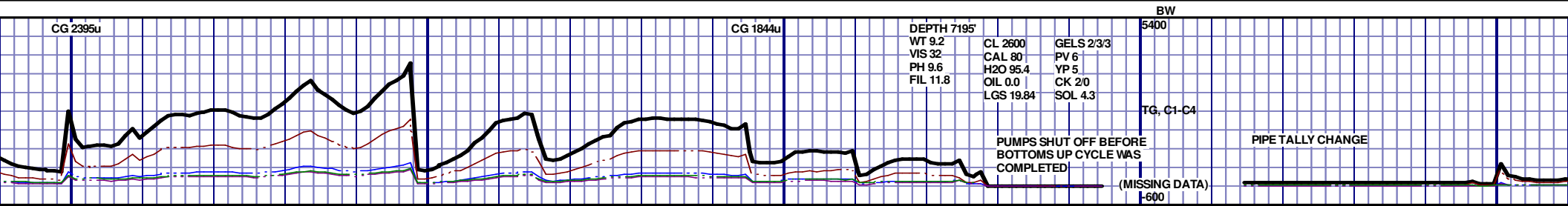
Formation: Niobrara C Chalk

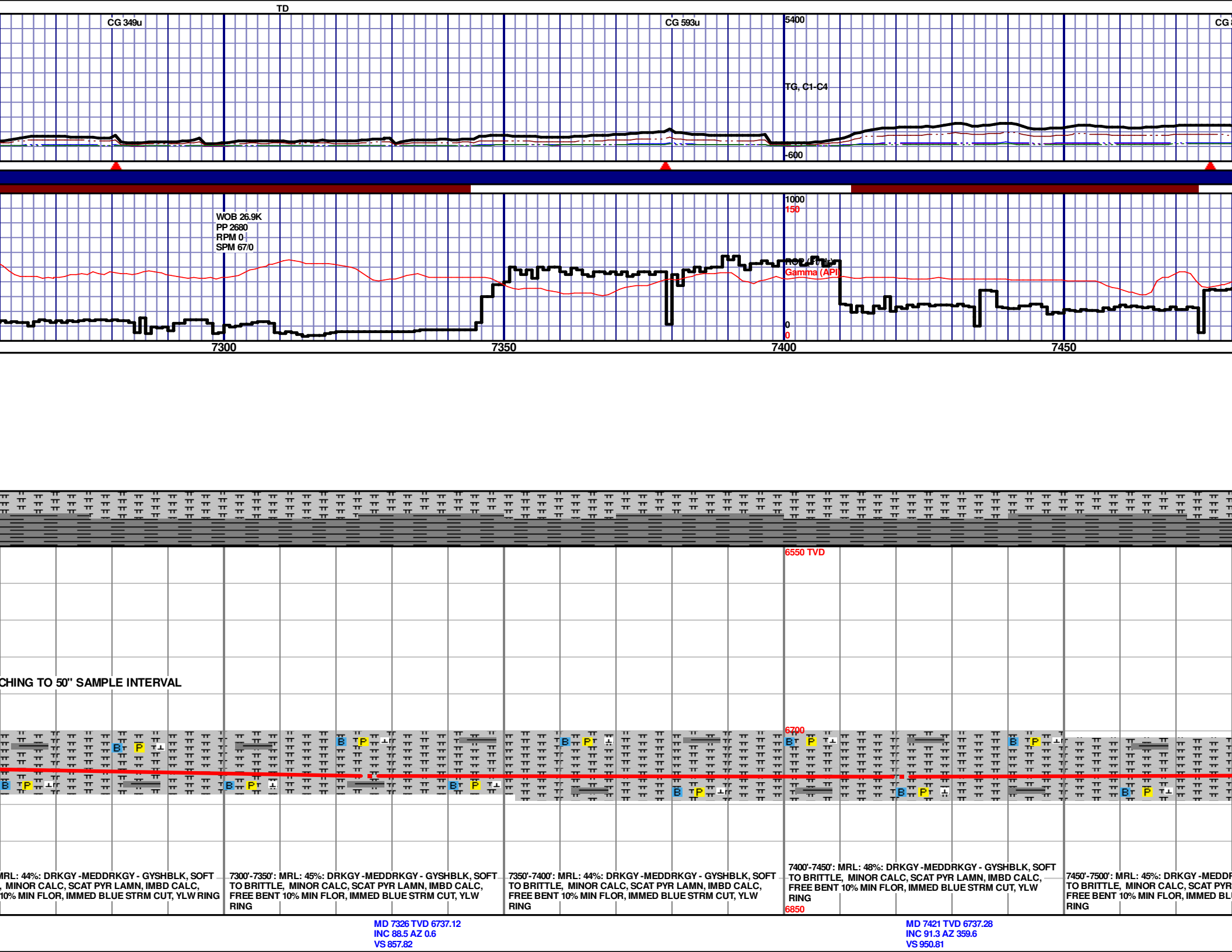
KB Elevation: 4874'

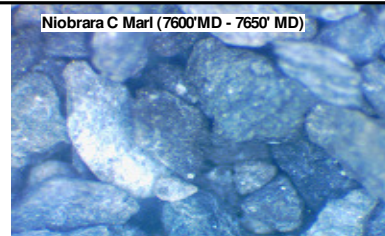
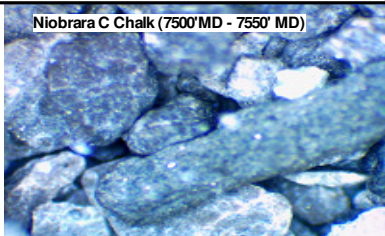
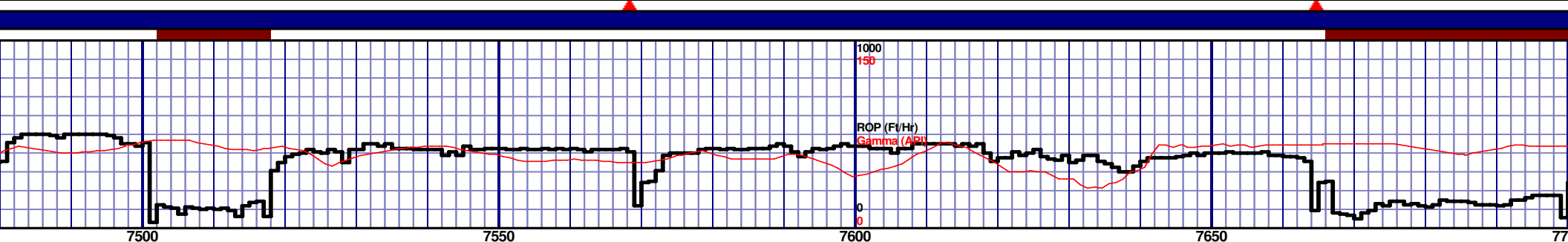
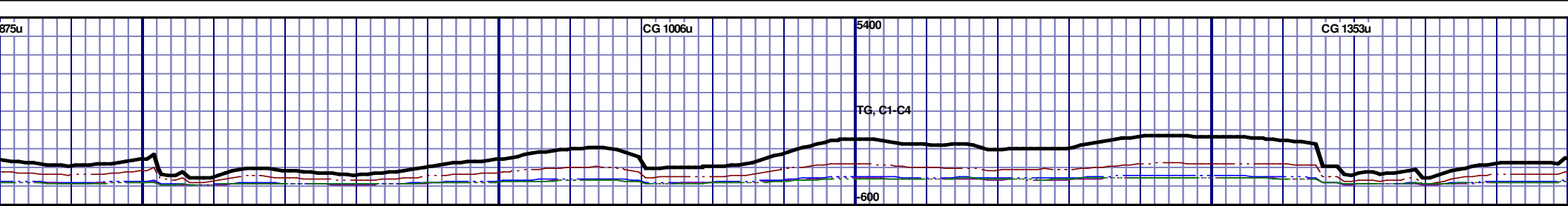
GR Elevation: 4850'

API Number: 05-123-37424-0000





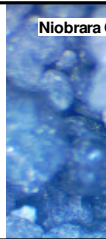
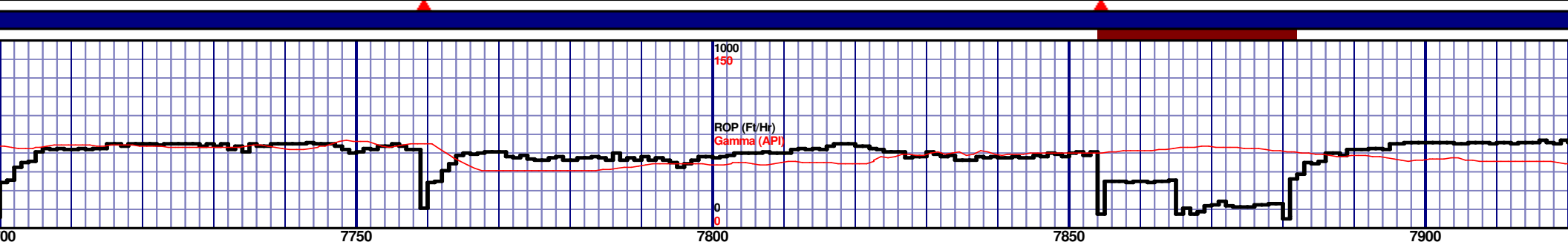
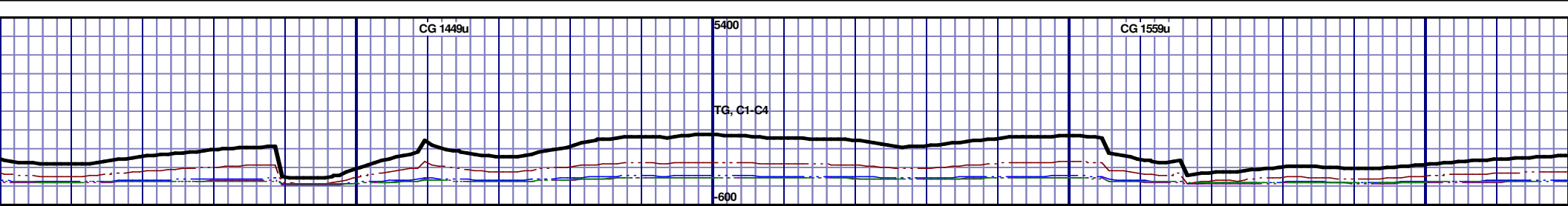




NIOBRARA C CHALK 7526' MD 6735' TVD				NIOBRARA C MARL 7612' MD 6734' TVD			
7500'-7550': CHLK: 58%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SOFT TO BRITTLE, IMBD CALC FLK, FREE CALC, IMBD PYR LAMN, FREE PYR, NO MIN FLOR, IMMED BLUE STRM CUT, YLW RING				7600'-7650': MRL: 45%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING			
7550'-7600': CHLK: 55%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SOFT TO BRITTLE, IMBD CALC FLK, FREE CALC, IMBD PYR LAMN, FREE PYR, NO MIN FLOR, IMMED BLUE STRM CUT, YLW RING				7650'-7700': MRL: 45%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING			

MD 7516 TVD 6735.71
INC 90.6 AZ 0.4
VS 1043.76

MD 7612 TVD 6734.28
INC 91.1 AZ 359.6
VS 1137.69



NIOBRARA C CHALK
7767' MD 6736' TVD

6550 TVD

6700

6850

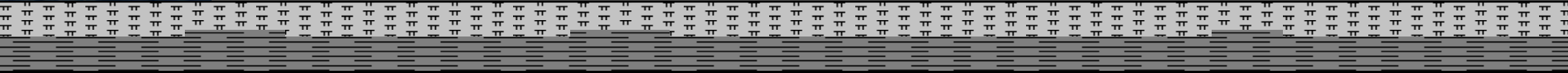
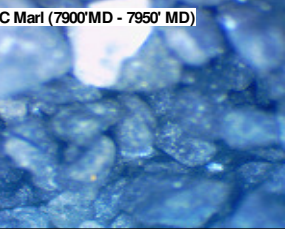
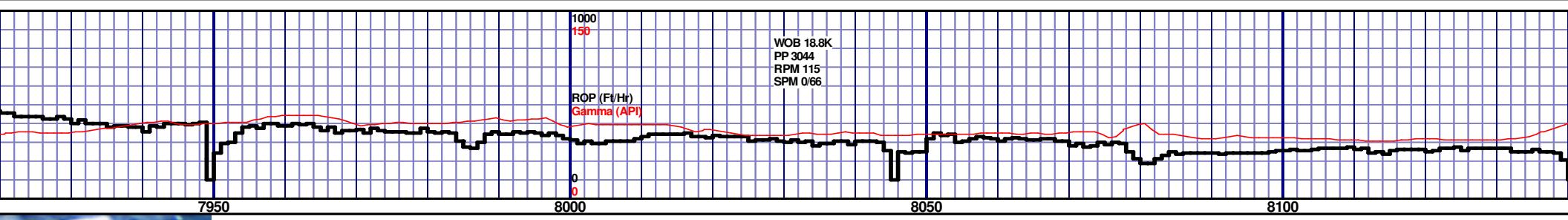
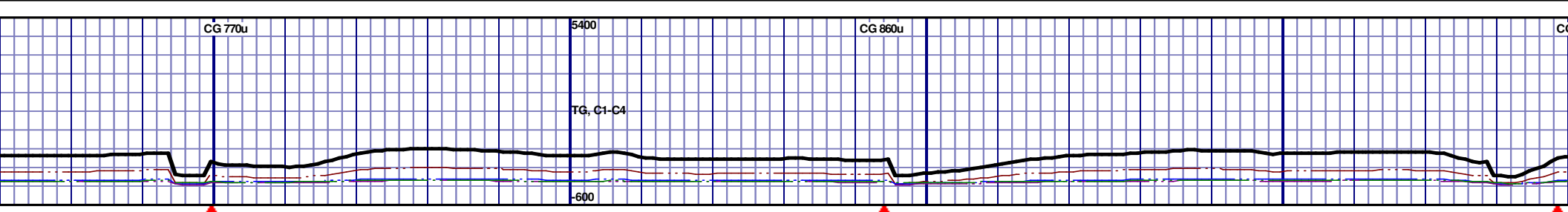
7700'-7750': MRL: 48%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

7750'-7800': CHLK: 55%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SOFT TO BRITTLE, IMBD CALC FLK, FREE CALC, IMBD PYR LAMN, FREE PYR, NO MIN FLOR, IMMED BLUE STRM CUT, YLW RING

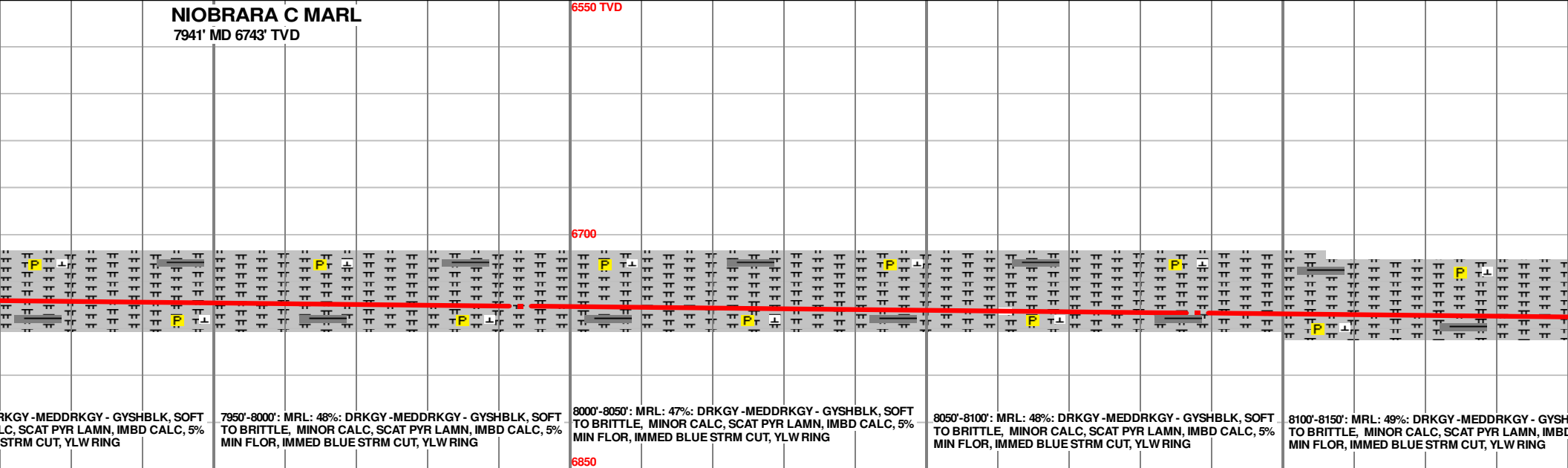
7800'-7850': CHLK: 55%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SOFT TO BRITTLE, IMBD CALC FLK, FREE CALC, IMBD PYR LAMN, FREE PYR, NO MIN FLOR, IMMED BLUE STRM CUT, YLW RING

7850'-7900': CHLK: 52%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SOFT TO BRITTLE, IMBD CALC FLK, FREE CALC, IMBD PYR LAMN, FREE PYR, NO MIN FLOR, IMMED BLUE STRM CUT, YLW RING

7900'-7950': MRL: 49%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING



NIOBRARA C MARL 7941' MD 6743' TVD



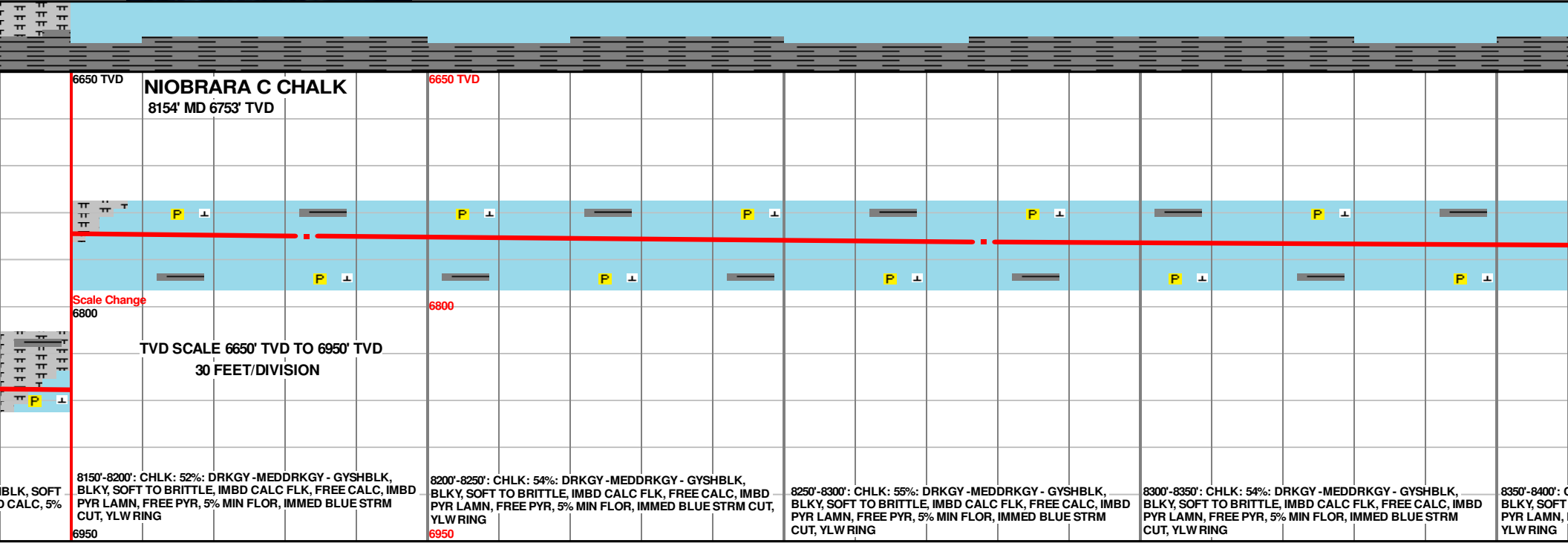
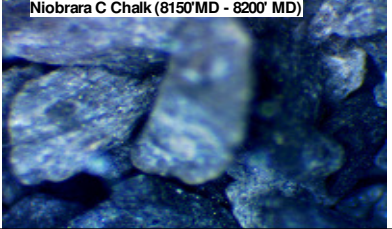
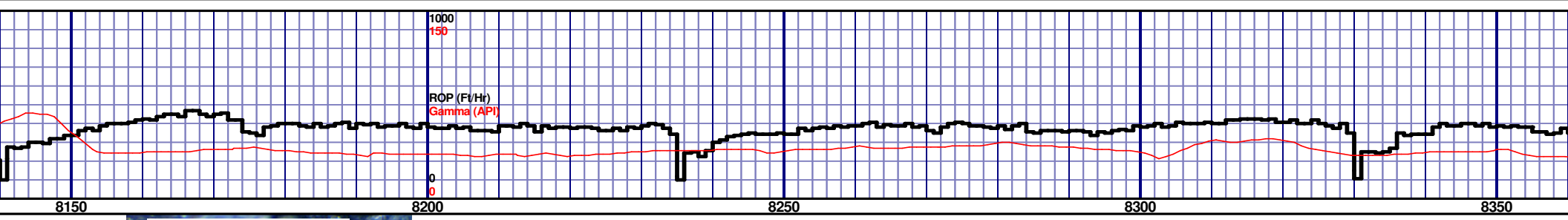
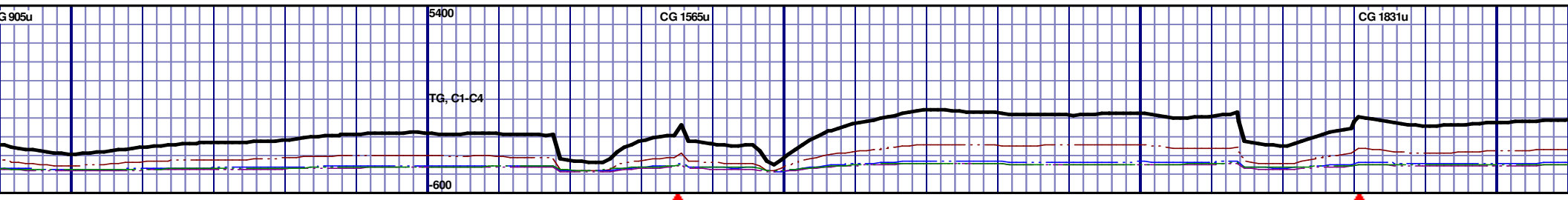
DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

7950'-8000': MRL: 48%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

8000'-8050': MRL: 47%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

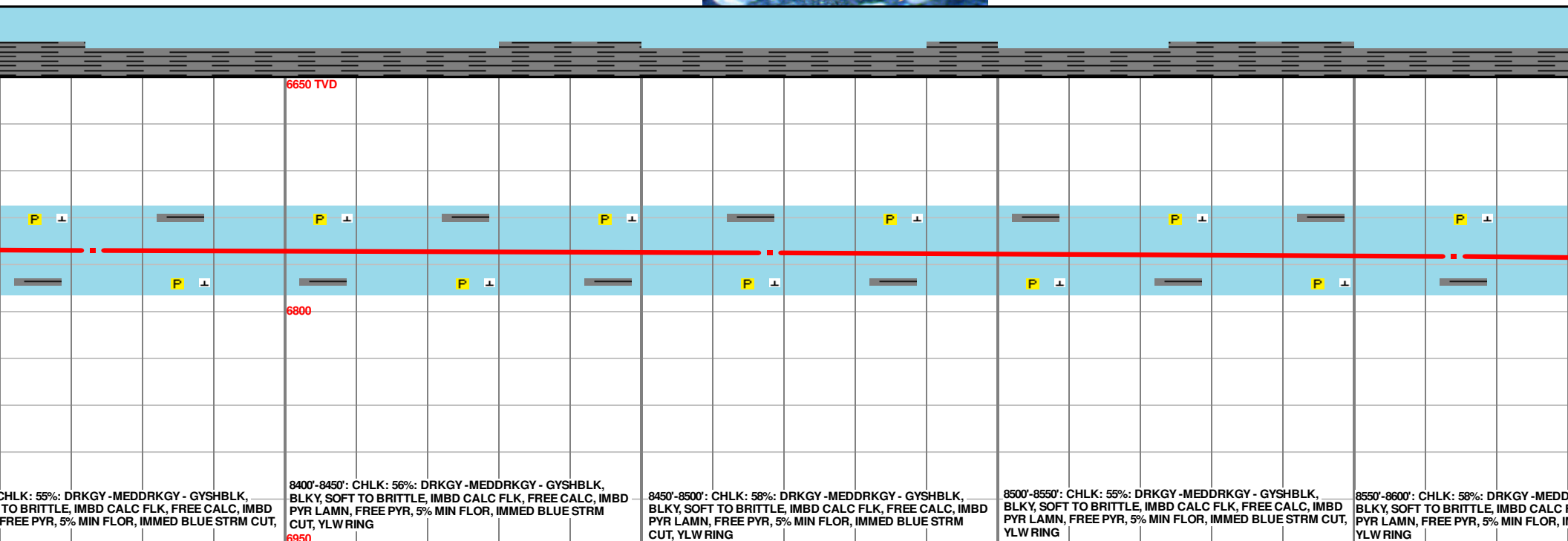
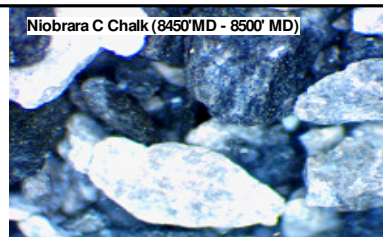
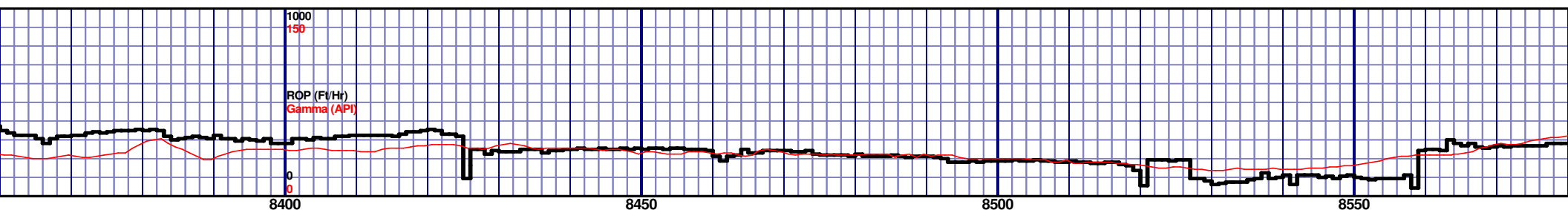
8050'-8100': MRL: 48%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

8100'-8150': MRL: 49%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

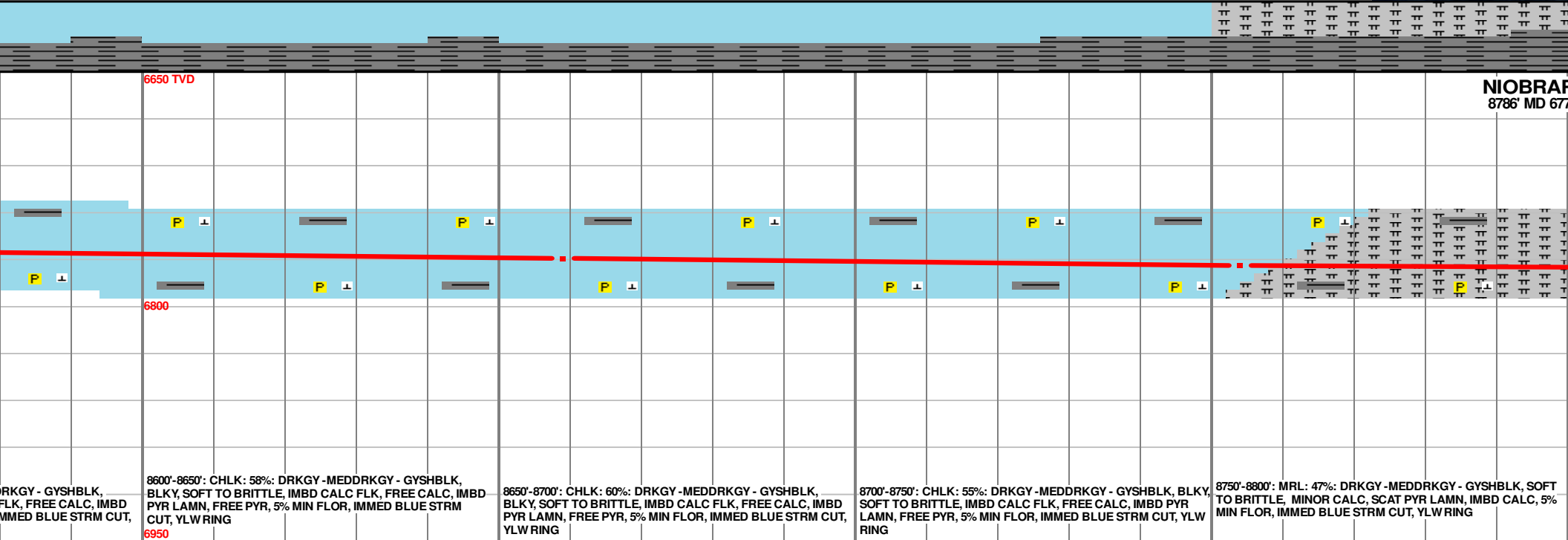
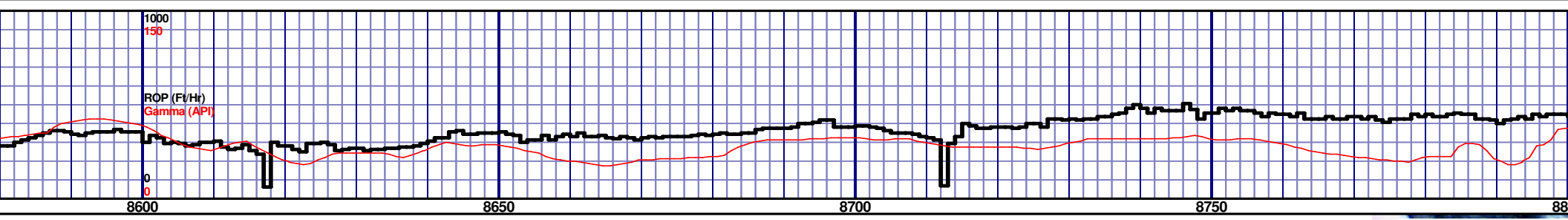
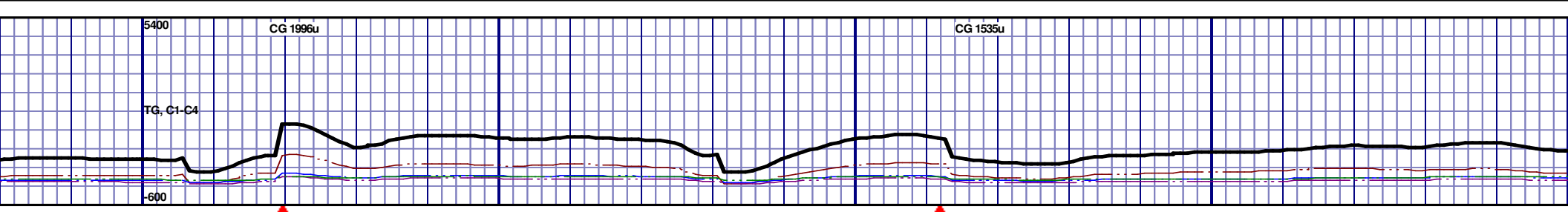


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INC 87.3 AZ 357.6
VS 1694.23

MD 8278 TVD 6758.94
INC 88 AZ 358.7
VS 1786.43

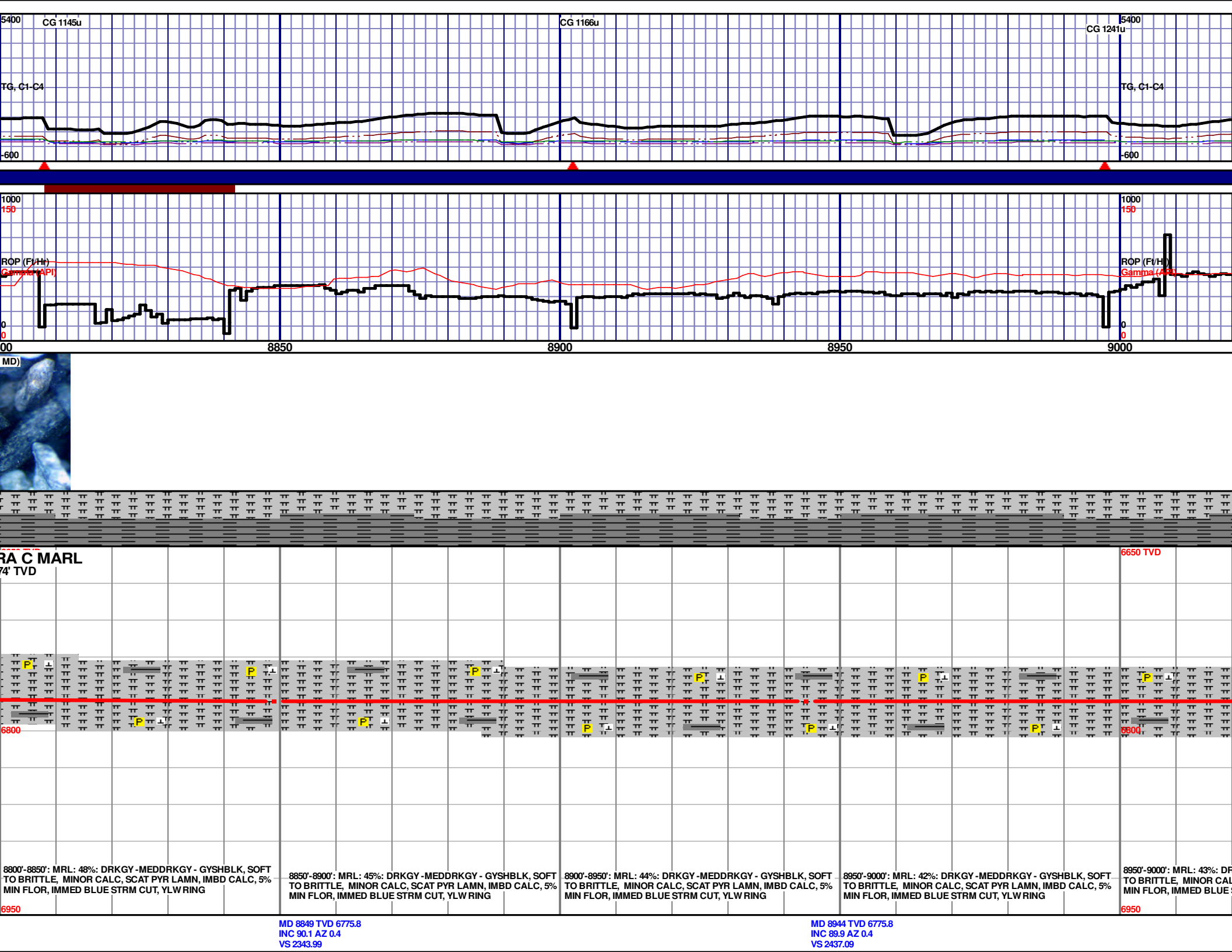


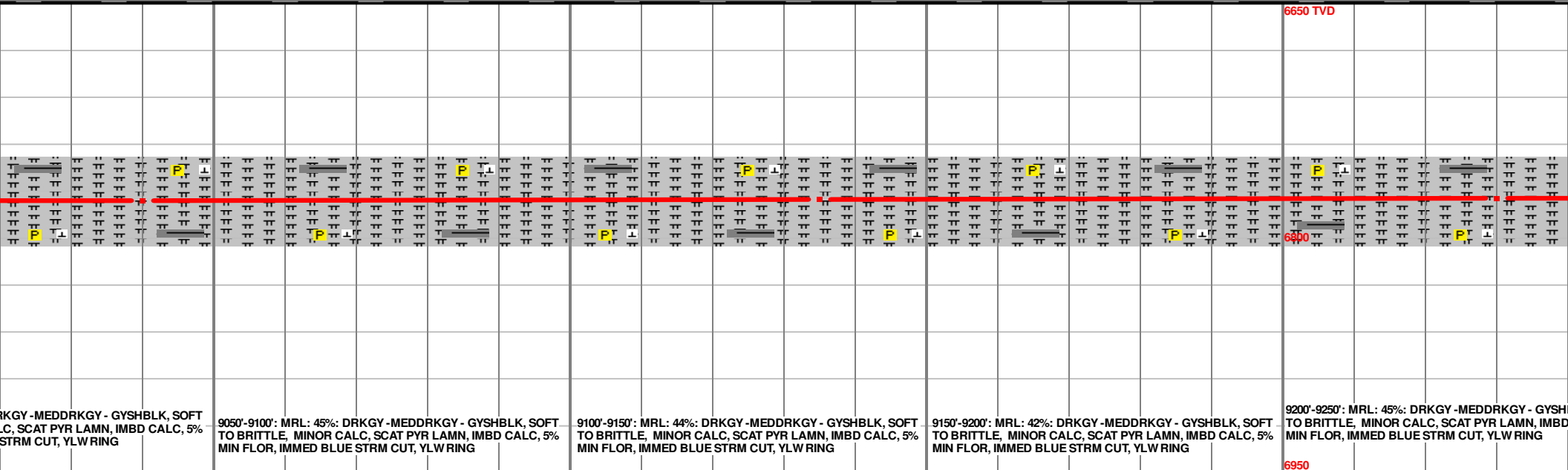
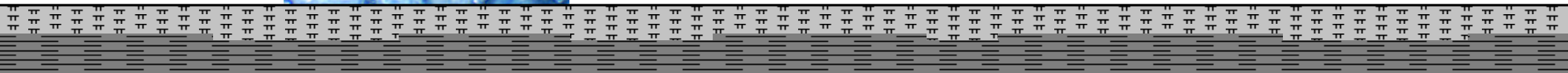
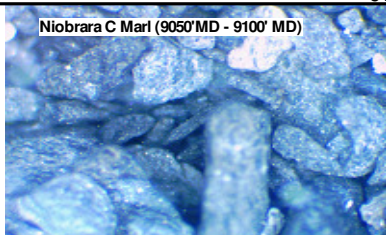
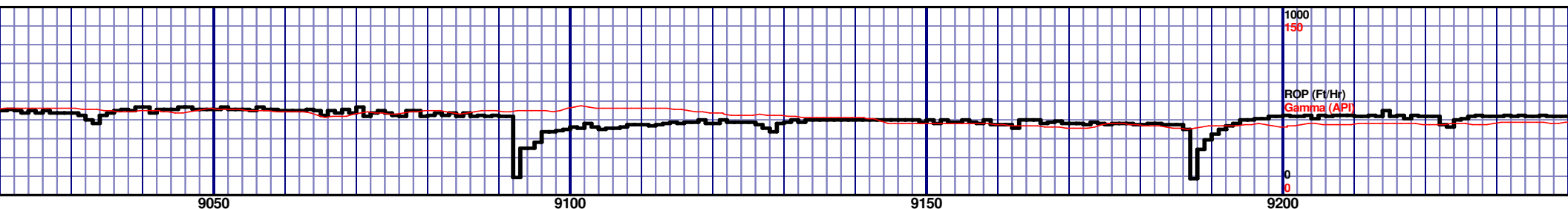
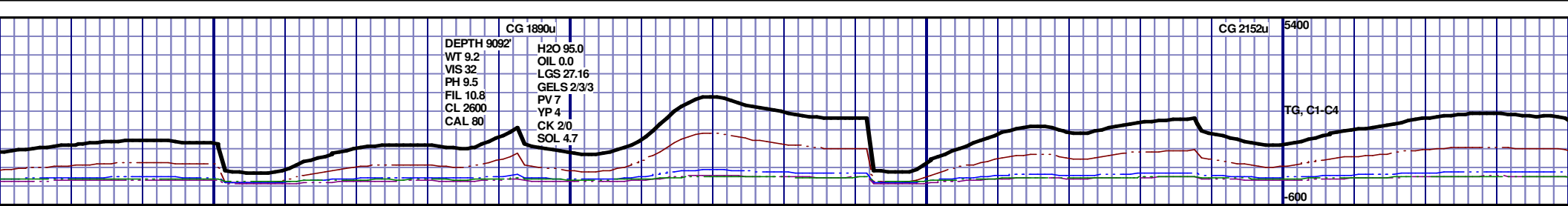
MD 8564 TVD 6764.94
INC 87.8 AZ 1.1
VS 2064.53

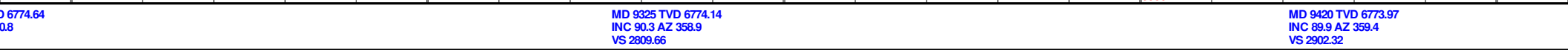
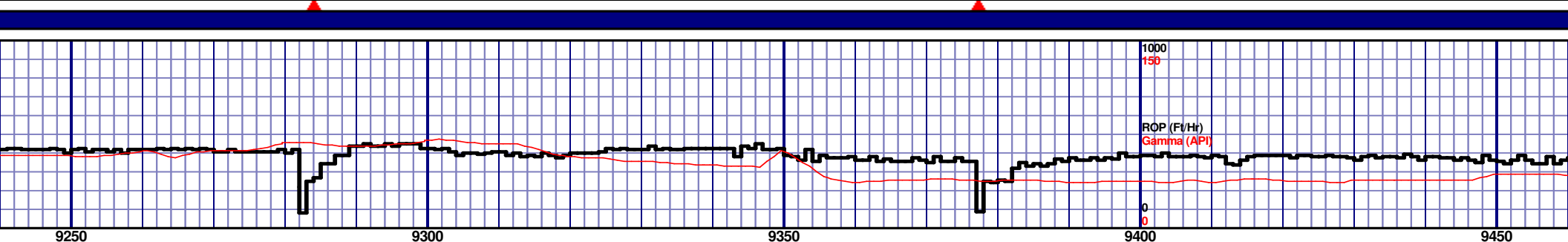


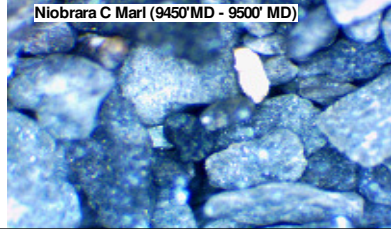
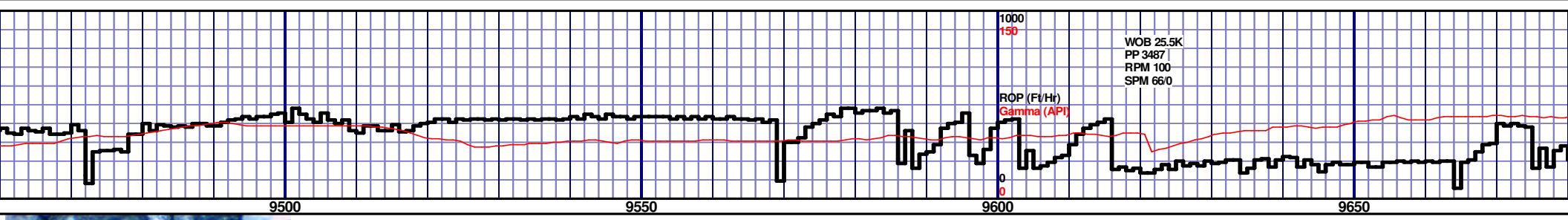
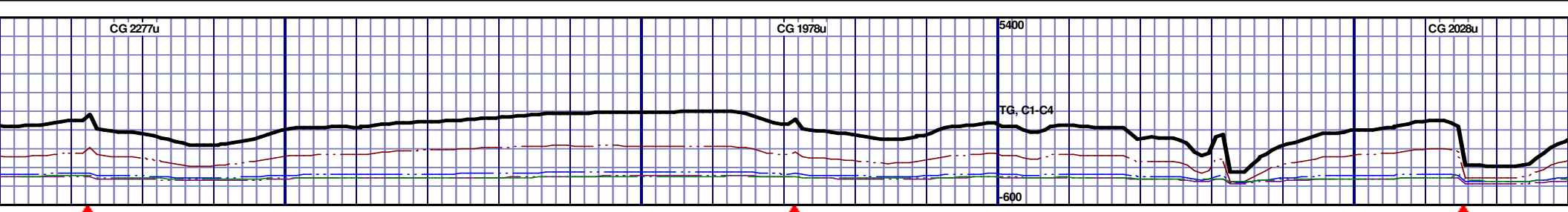
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INC 87.4 AZ 359.9
VS 2157.58

MD 8754 TVD 6773.48
INC 87.1 AZ 1.8
VS 2250.71





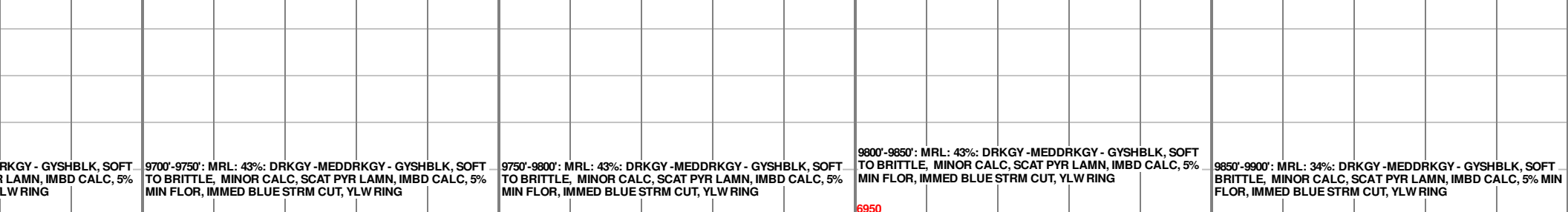
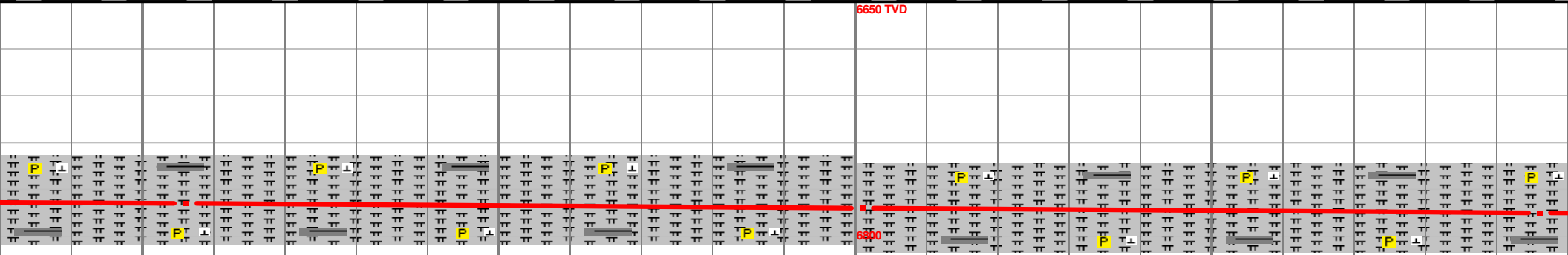
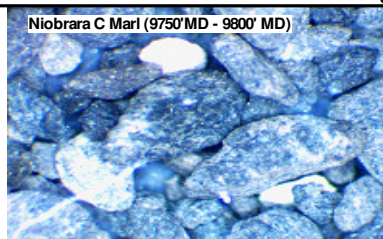
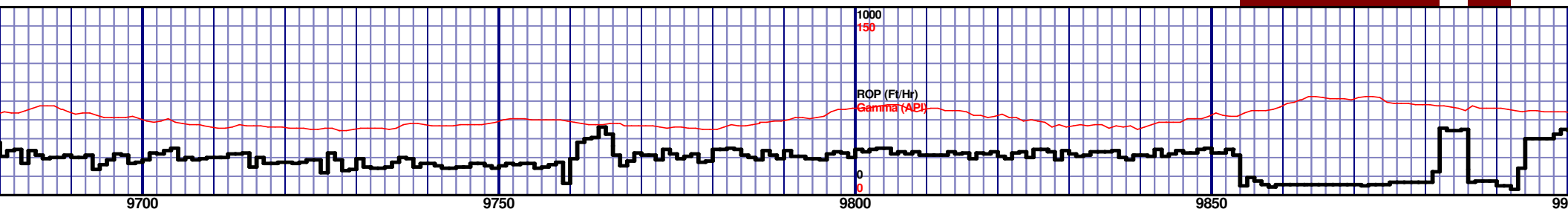
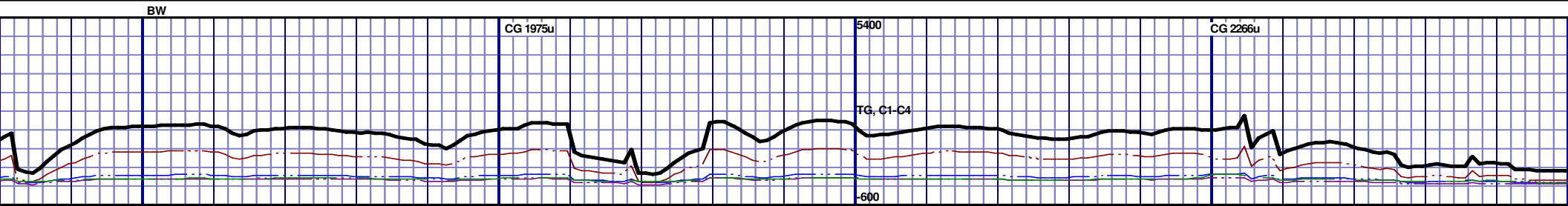




NIOBRARA C MARL 9481' MD 6774' TVD				6650 TVD			
9450'-9500': MRL: 50%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9600'-9650': MRL: 48%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING			
9500'-9550': MRL: 48%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9650'-9700': MRL: 50%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING			
9550'-9600': MRL: 45%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING							

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INC 88.9 AZ 359.2
VS 2996.01

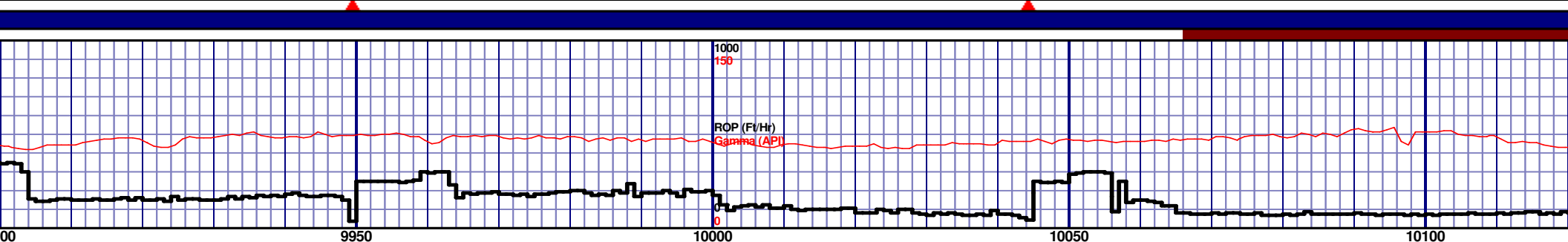
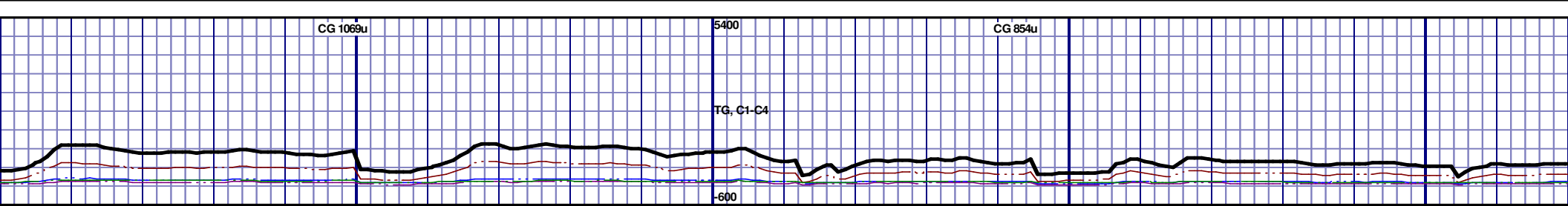
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INC 89 AZ 358.3
VS 3088.51



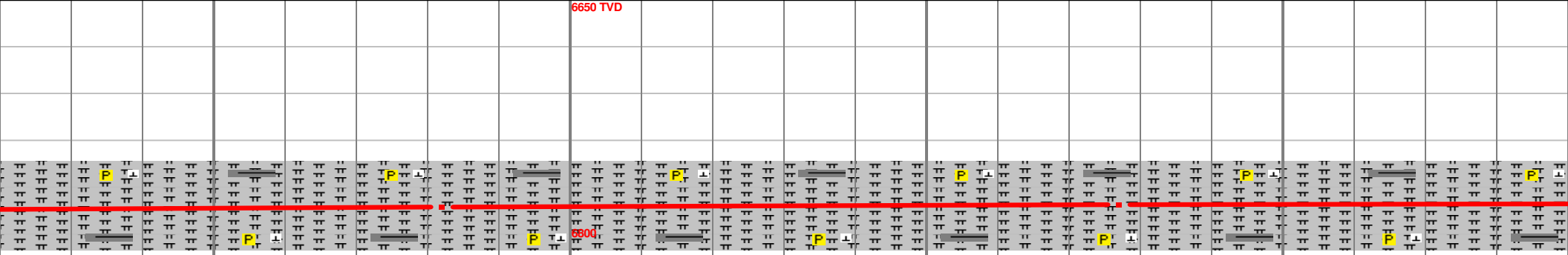
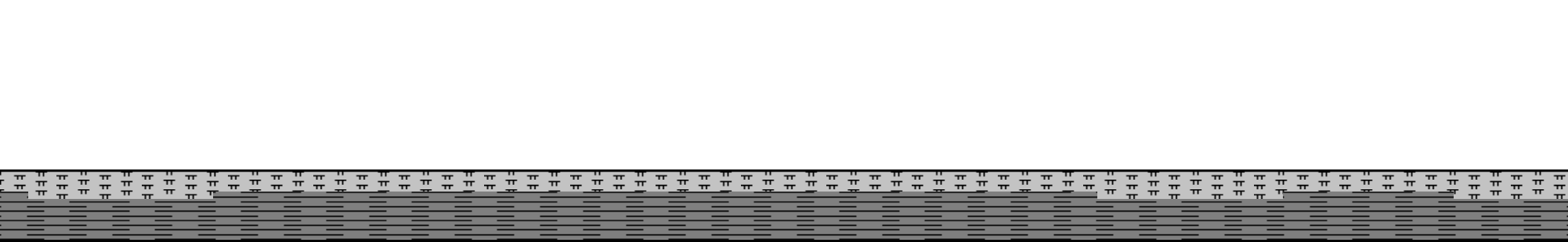
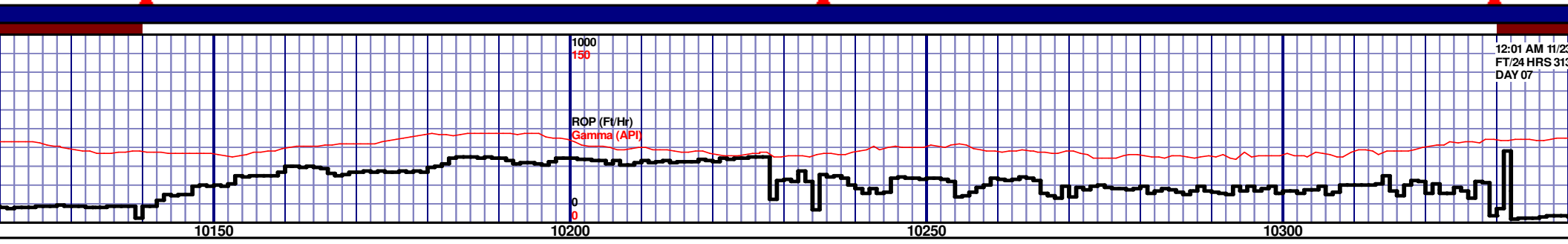
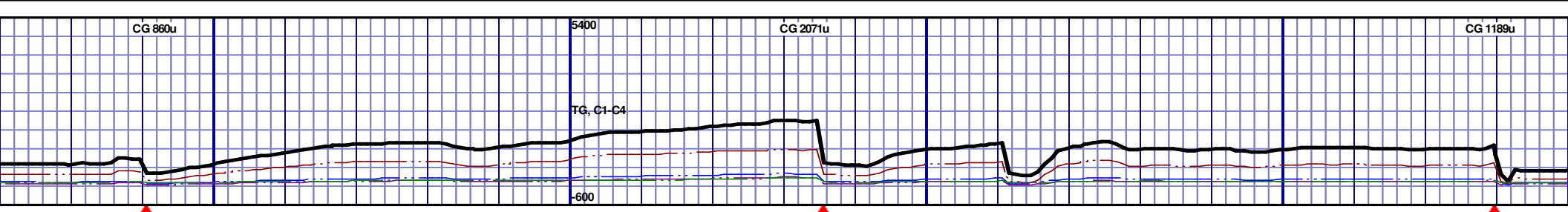
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INC 88.3 AZ 358.7
VS 3180.91

MD 9801 TVD 6782.19
INC 87.8 AZ 357.6
VS 3273.14

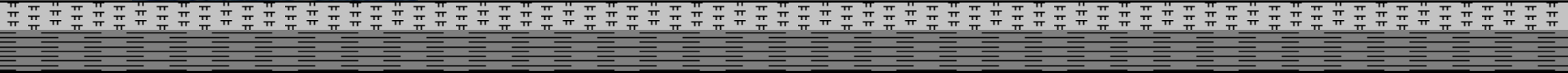
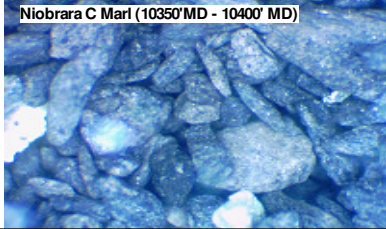
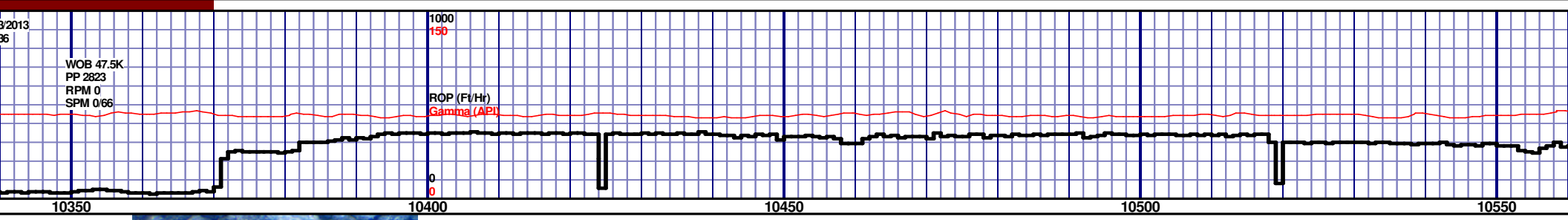
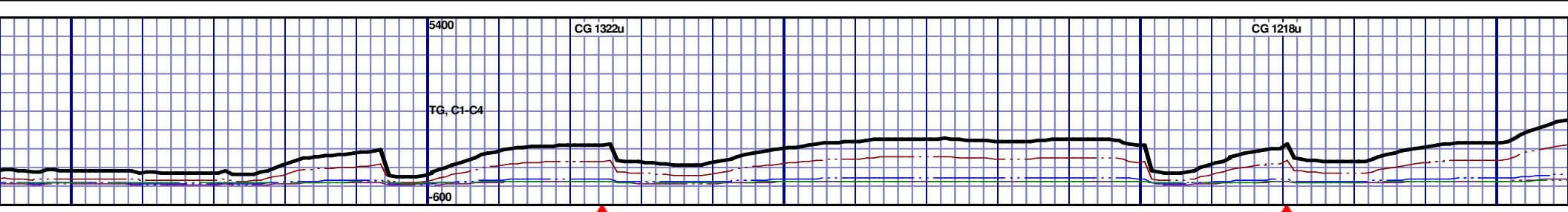
MD 9901 TVD 6782.19
INC 87.8 AZ 357.6
VS 3273.14



9900'-9950': MRL: 34%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					9950'-10000': MRL: 33%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10000'-10050': MRL: 33%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10050'-10100': MRL: 35%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10100'-10150': MRL: 35%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				
9996 TVD 6785.09					9992 TVD 6785.68					10007 TVD 6784.68					10087 TVD 6784.68					10107 TVD 6784.68				
88.7 AZ 359.4					90.6 AZ 357.8					90.6 AZ 357.1					90.6 AZ 357.1					90.6 AZ 357.1				
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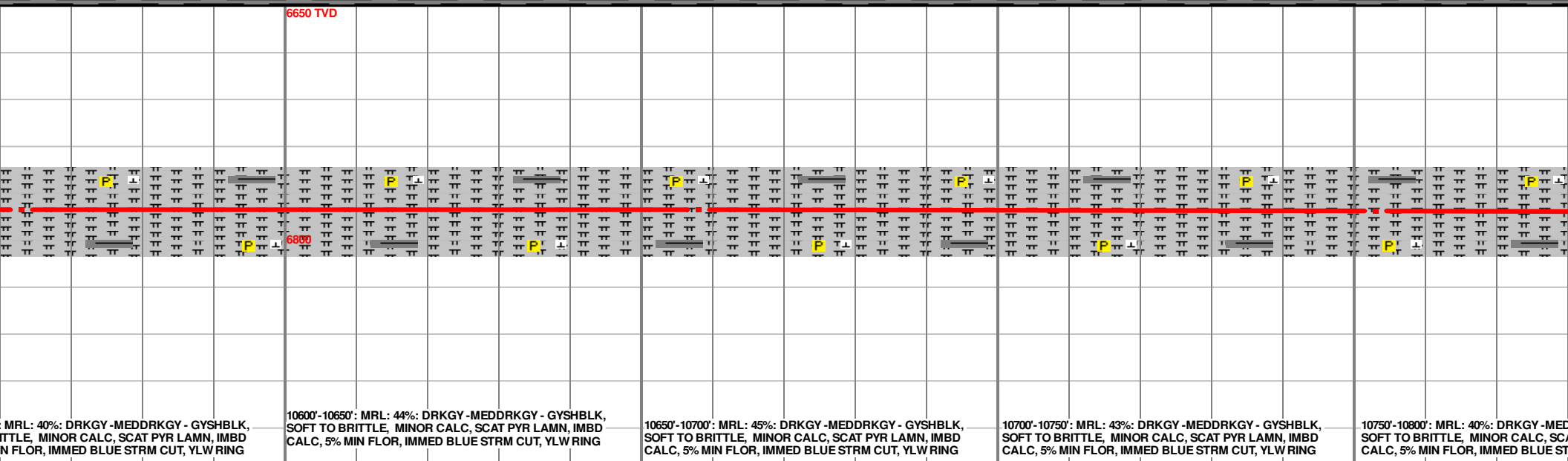
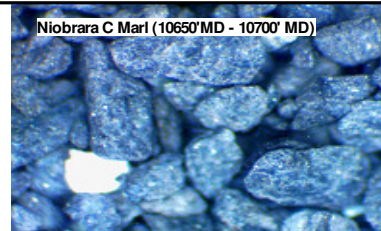
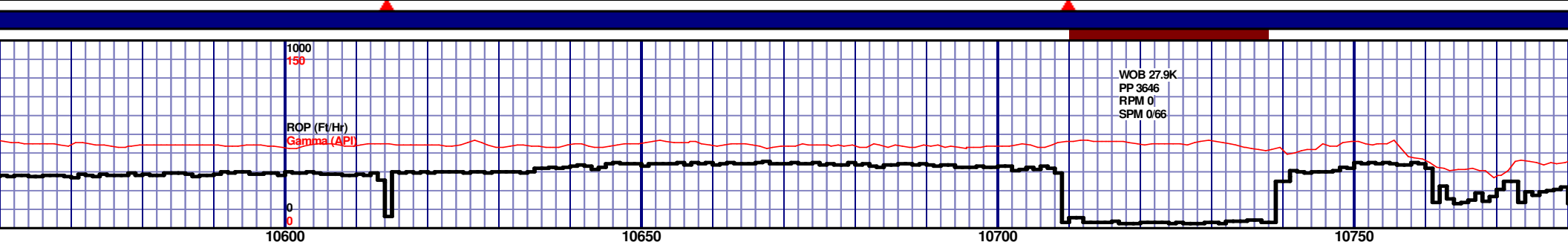
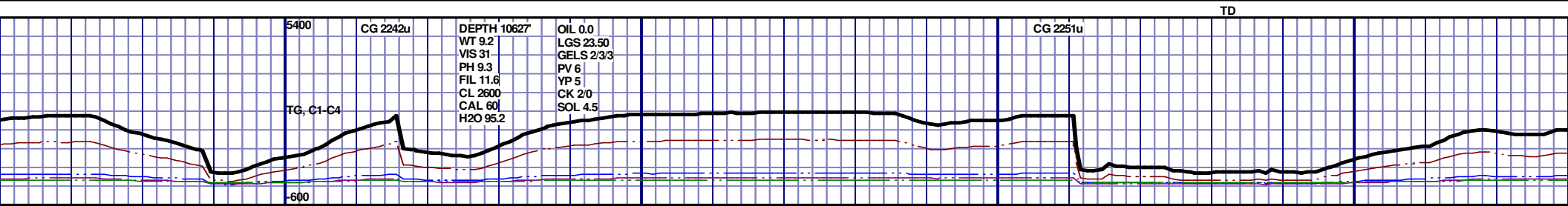
DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10150'-10200': MRL: 31%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10200'-10250': MRL: 31%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10250'-10300': MRL: 34%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10300'-10350': MRL: 34%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING
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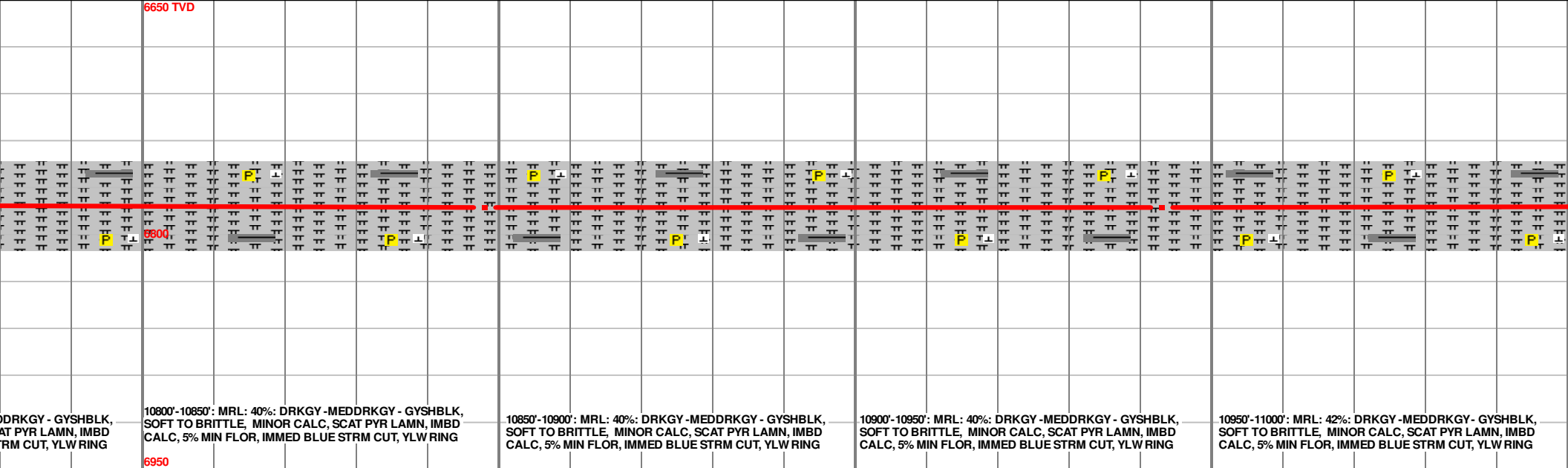
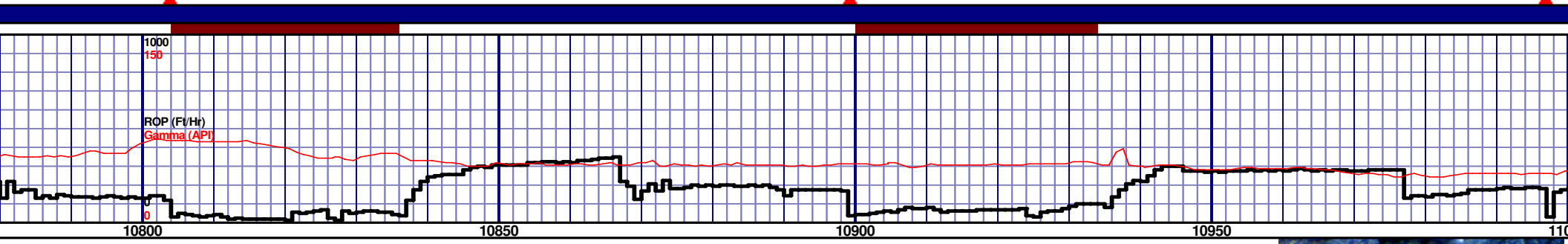
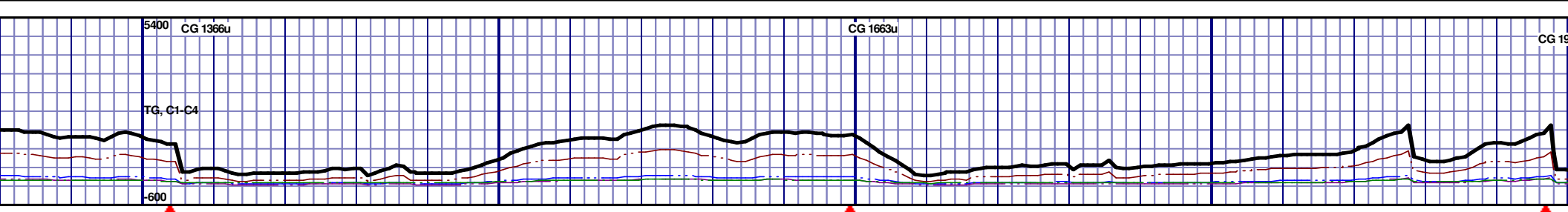


6650 TVD									
10350'-10400': MRL: 41%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10400'-10450': MRL: 41%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				
10450'-10500': MRL: 40%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10500'-10550': MRL: 40%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				
10550'-10600': MRL: 40%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10600'-10650': MRL: 40%: DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, MINOR CALC, SCAT PYR LAMN, IMBD CALC, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				

MD 10372 TVD 6780.62
INC 89.7 AZ 359.6
VS 3826.15

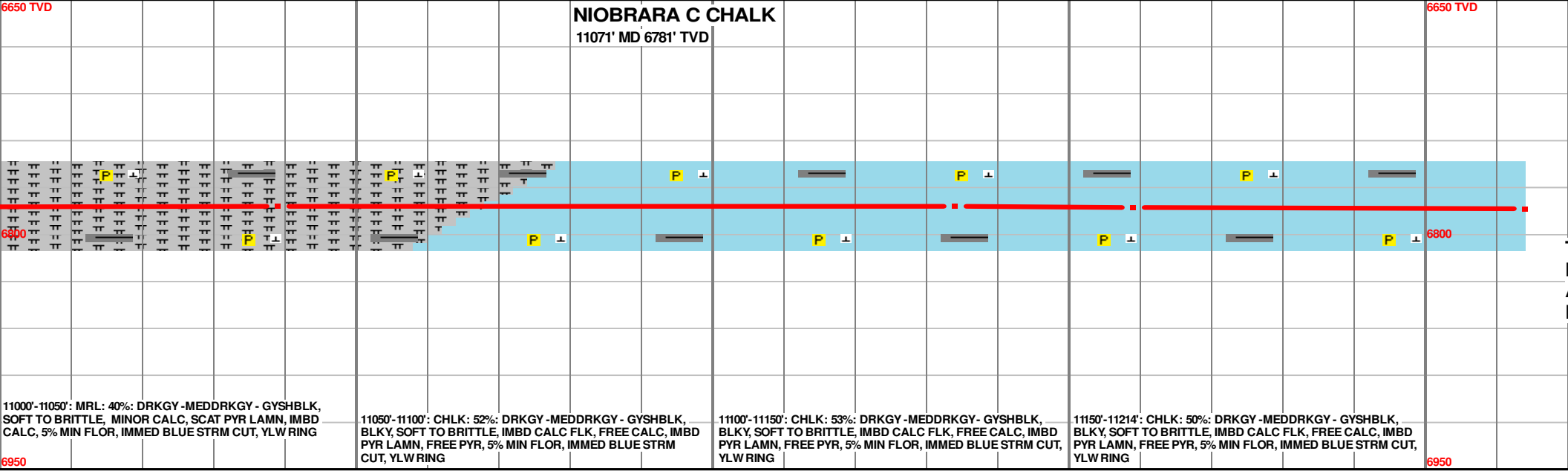
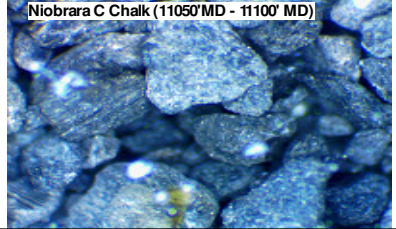
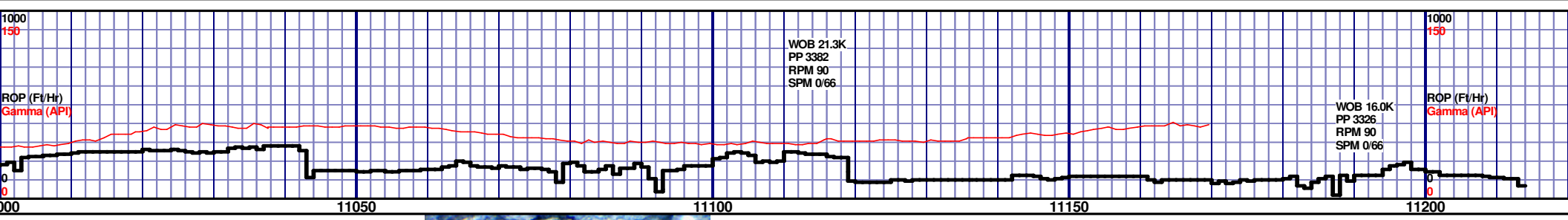
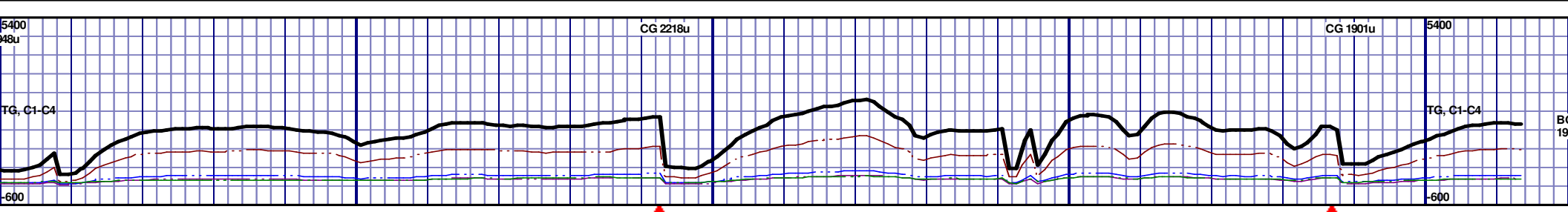
MD 10468 TVD 6780.79
INC 90.1 AZ 0.8
VS 3920.16





MD 10848 TVD 6782.61
INC 89.7 AZ 3.8
VS 4296.2

MD 10943 TVD 6782.53
INC 90.4 AZ 1.5
VS 4389.96



MD 11039 TVD 6781.86
INC 90.4 AZ 1.1
VS 4484.33

MD 11134 TVD 6782.19
INC 89.2 AZ 358.7
VS 4577.25

MD 11159 TVD 6782.61
INC 88.9 AZ 358.3
VS 4601.57

MD 11214 TVD 6782.61
INC 88.9 AZ 358.3
VS 4601.57

OTTOMS UP GAS
62u

DRILLERS TD @ 11214' MD
@ 10:01 AM ON 11/23/13

11250

RELEASED ON 11/23/2013

TD @ 11214' MD

THANK YOU FROM TOM
DENNEY, BRIAN WHITFIELD,
AND HORIZON WELL
LOGGING, LLC